Legislative Highlight

This section of the handbook describes the federal legislative programs to promote the transfer of technology--products and processes, skills and knowledge--from federal laboratories to the private sector. Legislation has created opportunities for the private sector to use the scientific, technical, and engineering resources of the federal laboratory system. These resources include skilled and knowledgeable people, new technologies, and facilities often not accessible elsewhere.

Since 1980, Congress has enacted a series of laws to promote technology transfer and to provide technology transfer mechanisms and incentives. The intent of these laws and related executive orders is to encourage the pooling of resources when developing commercial technologies. The bi-directional sharing between Federal laboratories and private industry includes technologies, personnel, facilities, methods, expertise, and technical information in general.

Technology Transfer Legislation

Stevenson-Wydler Technology Innovation Act of 1980 (PL 96-480) [15 USC 3701-3714]

- Focused on dissemination of information.
- Required federal laboratories to take an active role in technical cooperation.
- Established Offices of Research and Technology Applications (ORTAs) at major federal laboratories.
- Established the Center for the Utilization of Federal Technology (in the National Technical Information Service).

Bayh-Dole Act of 1980 (PL 96-517)

- Permitted universities, not-for-profits, and small businesses to obtain title to Inventions developed with governmental support.
- Provided early on intellectual property rights protection of invention descriptions from public dissemination and Freedom of Information Act (FOIA).
- Allowed government-owned, government-operated (GOGO) laboratories to grant exclusive licenses to patents.

Small Business Innovation Development Act of 1982 (PL 97-219)

- Established the Small Business Innovation Research Program (SBIR)
- Required agencies to provide special funds for small business R&D connected to the agencies' missions.

Cooperative Research Act of 1984 (PL 98-462)

- Eliminated treble damage aspect of antitrust concerns of companies wishing to pool research resources and engage in joint precompetitive R&D.
- Resulted in Consortia: Semiconductor Research Corporation and Microelectronics an Computer Technology Corporation, among others.

Trademark Clarification Act of 1984 (PL 98-620)

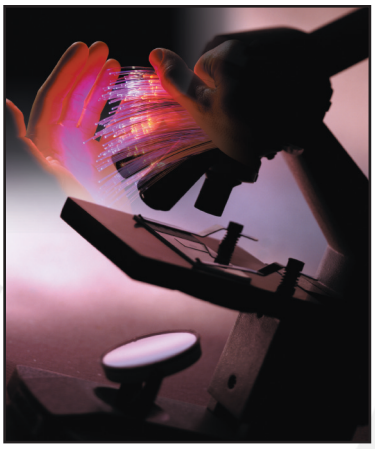
- Permitted decisions to be made at the laboratory level in government-owned, contractor-operated (GOCO) laboratories as to the awarding of licenses for patents.
- Permitted contractors to receive patent royalties for use in R&D, awards, or for education.
- Permitted private companies, regardless of size, to

obtain exclusive licenses.
- Permitted laboratories run by universities and non-profit institutions to retain title to inventions within limitations.

Federal Technology Transfer Act of 1986 (PL 99-502)
- Made technology transfer a responsibility of all federal laboratory scientists and engineers.
- Mandated that technology transfer responsibility be considered in employee performance evaluations.
- Established principle of royalty sharing for federal inventors (15% minimum) and set up a reward system for other innovators.
- Legislated a charter for Federal Laboratory Consortium (FLC) for Technology Transfer and provided a funding mechanism for that organization to carry out its work.
- Empowered each agency to give the directors of GOCO laboratories authority to enter into cooperative R&D agreements and negotiate licensing agreements with streamlined headquarters review.
- Allowed laboratories to make advance agreements with large and small companies on title and license to inventions resulting from Cooperative R&D Agreements (CRADAs) with government laboratories.
- Provided for exchanging GOCO laboratory personnel, services, and equipment with their research partners.
- Made it possible to grant and waive rights to GOCO laboratory inventions and intellectual property and allowed current and former federal employees to participate in commercial development, to the extent there is no conflict of interest.

Executive Orders 12591 and 12618 (1987): Facilitating Access to Science and Technology
- Promoted the commercialization of science and technology.
- Delegated CRADA authority to GOGO laboratories.
- Established the Technology Share Program.
- Required the Secretary of Defense to identify a list of funded technologies with potential use to US industry and academia.
- Required the Director of the Office of Science and Technology Policy to convene an interagency task force to identify and disseminate creative approaches to technology transfer from federal laboratories.
- Provided that any technology considered by the head of any Executive agency or department to be "detrimental to national security" may be excluded from transfer.
- Provided for uniform treatment of all federally funded inventions.

Omnibus Trade and Competitiveness Act of 1988 (PL 100-418)
- Placed emphasis on the need for public/private cooperation on assuring full use of results and resources.
- Established centers for transferring manufacturing technology.
- Established Industrial Extension Services within states and an information clearing house on successful state and local technology programs.
- Changed the name of the National Bureau of Standards to the National Institute of Standards and Technology and broadened its technology transfer role.
- Extended royalty payment requirements to non-government employees of federal laboratories.
- Authorized training for Technology Transfer centers administered by the Department of Education.



National Institute of Standards and Technology Authorization Act for FY 1989 (PL 100-519)

- Established a Technology Administration within the Department of Commerce.
- Permitted contractual consideration for rights to intellectual property, other than patents, in cooperative research and development agreements. Included software development contributors eligible for awards. Clarified the rights of guest worker inventors regarding royalties.

National Competitiveness Technology Transfer Act of 1989 (PL 101-189) (included as Section 3131 et seq. of DoD Authorization Act for FY 1990)

- Granted GOCO federal laboratories opportunities to enter into CRADAs and other activities with universities and private industry, under essentially the same guidelines as high-lighted under the Federal Technology Transfer Act of 1986.
- Allowed information and innovations, brought into, and created through cooperative agreements to be protected from disclosure.
- Provided a technology transfer mission for the nuclear weapons laboratories.

Defense Authorization Act for FY 1991 (PL 101-510)

- Established model programs for national defense laboratories to demonstrate successful relationships between federal government, state and local governments, and small businesses.
- Provided for a federal laboratory to enter into a contract or memorandum of understanding with a partnership intermediary to perform services related to cooperative or joint activities with small businesses.
- Provided for development and implementation of a National Defense Manufacturing Technology Plan.

American Preeminence Act 1991 (PL 102-245)

- Extended FLC mandate, removed FLC responsibility for conducting a grant program, and required the inclusion of the results of an independent annual audit in the FLC Annual Report to Congress and the President.
- Included intellectual property as potential contributions under CRADAs.
- Allowed laboratory directors to give excess equipment to educational institutions and nonprofit organizations as a gift.

Small Business Technology Transfer (STTR) Program 1992 (PL 102-564)

- Established a three year pilot program - Small Business Technology Transfer (STTR), at DoD, DoE, HHS, NASA, and NSF.
- Directed the Small Business Administration (SBA) to oversee and coordinate the implementation of the STTR Program.
- Designed the STTR similar to the SBIR program.
- Required each of the five agencies to fund cooperative R&D projects involving a small company and a researcher at a university, federally-funded research and development center, or nonprofit research center.

National Department of Defense Authorization Act for 1993 (PL 102-125)

- Facilitated and encouraged technology transfer to small businesses.

National Department of Defense Authorization Act for FY 1993 (PL 102-484)

- Established the DoD Office of Technology Transition
- Extended the streamlining of small business technology transfer procedures for non-federal laboratory contractors.

- Directed DoE to issue guidelines to facilitate technology transfer to small businesses.
- Extended the potential for CRADAs to DoD-funded Research and Development Centers (RDCs) not owned by the government.

National Department of Defense Authorization Act for 1994 (PL 103-160)

- Broadened the definition of a laboratory to include weapons production facilities of the DoE.
- Emphasized that bringing technological and industrial innovation to the marketplace is central to the economic, environmental, and social well being of the people of the United States.
- The commercialization of technology and industrial innovation in the United States will be enhanced if companies, in return for reasonable compensation to the Federal Government, can more easily obtain exclusive licenses to inventions that develop as a result of cooperative research with scientists employed by Federal laboratories.

National Technology Transfer and Advancement Act of 1995 (PL 104-113)

- Amended the Stevenson-Wydler Act to make CRADAs more attractive to both federal laboratories and scientists, and to private industry.
- Provides assurances to US companies that they will be granted sufficient intellectual property rights to justify prompt commercialization of inventions arising from a CRADA with a federal laboratory.
- Gives collaborating party in a CRADA the right to choose an exclusive or nonexclusive license for a pre-negotiated field of use for an invention resulting from joint research under a CRADA.
- CRADA partner may also retain title to an invention made solely by its employees in exchange for granting the government a worldwide license to use the invention.
- Revised financial rewards for federal scientists who develop marketable technology under a CRADA, by increasing the annual limit of royalty payments to laboratories from $100,000 per person to $150,000.
- Permanently provided the FLC with funding from the agencies.

Defense Authorization Act for 1997 (PL 104-201)

- Permits any Federally Funded Research and Development Center (FFRDC) to enter into CRADAs with any federal or nonfederal laboratory.

Technology Transfer Commercialization Act of 2000 (PL 106-404)

- Amends the Stevenson-Wydler Act of 1980 to revise requirements regarding enumerated authority under a CRADA to permit Government laboratories to grant licenses to federally owned inventions for which a patent application was filed before the signing of the agreement, and directly within the scope of work under such agreement.
- Requires a license applicant to make a commitment to achieve practical application of the invention within a reasonable time.
- Prohibits an agency from granting an exclusive or partially exclusive license on a federally owned invention unless it has provided 15 days' public notice and considered all comments received (exempts from such requirement the licensing of any inventions made under a CRADA.
- Revises the policy and objective of Congress regarding use of the patent system to ensure that nonprofit organization and small business inventions are used to promote free competition and enterprise (current law) without unduly encumbering future research and discovery.
- Makes certain technical amendments to: (1) the Bayh-Dole Act with regard to Government acquisition of the rights of a private party to a federally owned invention; and (2) the Stevenson-Wydler Act relating to, among other things, the distribution of royalties received by federal agencies.
- Requires each federal agency with a federally funded laboratory that has one or more CRADAs to report to the Committee on National Security of the National Science and Technology Council (Committee) and Congress, with respect to major proposed CRADAs that involve critical national security technology or that may have a significant impact on domestic or international competitiveness.

- Amends the Stevenson-Wydler Act to authorize federal laboratories to enter into contracts with partnership intermediaries to perform services that increase the likelihood of success in the conduct of cooperative or joint activities with institutions of higher education.
- Revises agency reporting requirements relating to technology transfer programs to require each agency which operates a federal laboratory or which conducts activities relating to the licensing or protection of federally owned inventions to report annually to the Office of Management and Budget, as part of the agency's annual budget submission, and to the Secretary of Commerce and the Attorney General on the agency's technology transfer activities, including information on patents received, licenses executed and terminated, and royalties earned.

United States Code

- All of the preceding laws are embodied in the United States Code (U.S.C.), which provides a single source uniting the provisions of each law. The primary section of the U.S.C. covering technology transfer is Title 15 (Commerce and Trade), Chapter 63 (Technology Innovation). Other titles and chapters of the U.S.C cover related topics, such as copy rights, patents and intellectual property.

- Title 15, 3701 through 3704, covers the findings of Congress, the purpose of the legislation, definitions and the establishment of various offices to carry out the intent of the legislation. Title 15, 3705 through 3708, provides for the establishment of Cooperative Research Centers, grants and cooperative agreements. Affiliated with universities or nonprofit institutions, the Cooperative Research Centers engage in research that supports technological innovations and provides assistance and training to individuals and small businesses. The Centers must also use the expertise of federal laboratories, where appropriate.
- Title 15, 3710 through 3710d, covers the establishment of ORTAs, the FLC, outstanding contributions, and the sharing of royalties or licensing fees with laboratory inventors.

DoD Domestic Technology Transfer (DT2) Program Directive (DoDD 5535.3) and DoD Technology Transfer (DT2) Program Instruction (DoDI 5535.8)

- These regulations authorize the DoD's Domestic Technology Transfer Program and respond to the requirements of the Stevenson-Wydler Technology Innovation Act of 1980; the Federal Technology Transfer Act of 1986; and Executive Order 12591, Facilitating Access to Science and Technology. These regulations establish requirements for an ORTA. They define the responsibilities for the Under Secretary of Defense for Acquisition, the heads of DoD components, and ORTAs. They also authorize DoD components and their government operated laboratories to enter into CRADAs and provide for the use of awards and the distribution of royalties.

Summary of Technology Transfer Legislation, Executive Orders, Department of Defense and Air Force Directives and Instruction

Year	Public Law (P.L.)	Name	Major Elements (Purpose)
1966	P.L. 89-554	Freedom of Information Act (FOIA) *(Amended in 1996)*	- Provided a vehicle to inform the public about Federal Government activities - Provided the right to request agency records and have them made available promptly
1980	P.L. 96-480	Stevenson-Wydler Technology Innovation Act	- Established technology transfer as a mission of the Federal Government - Established ORTAs
1980	P.L. 96-517	Bayh-Dole Act	- Superseded all previous laws that give small businesses and nonprofit organizations (including universities certain rights related to inventions they developed under funding agreements with the Government. (did not give maintenance and operation (M&O) contractors right to elect title to its inventions.) - Protected descriptions of inventions from public dissemination and FOIA for reasonable period of time to file patent applications
1982	P.L. 97-219	Small Business Innovation Development Act Of 1982	- Established SBIR, set aside funds for small business, crested to expand research opportunities for small businesses
1984	P.L. 98-620	Trademark Clarification Act	- Amended the Bayh-Dole Act to permit M&O contractors to elect title to inventions in exceptional circumstances and national security-funded technologies

Summary of Technology Transfer Legislation, Executive Orders, Department of Defense and Air Force Directives and Instruction

Year	Public Law (P.L.)	Name	Major Elements (Purpose)
1984	P.L. 98-462	Competitive Research Act of 1984	- Stressed meeting R&D needs of government, stimulate technology innovation by small business, and involve minorities
1986	P.L. 99-502	Federal Technology Transfer Act (FTTA)	- Authorized CRDAs for Government-owned Government-operated (GOGOs) organizations - Established FLC - Provided a preference to small businesses who agree to certain U.S. manufacturing requirements - Established technology transfer as a laboratory mission
1987	N/A	Executive Order 12591, Facilitating Access to Science and Technology	- Emphasized U.S. commitment to technology transfer - Required Government agencies to delegate authority to Government-operated laboratories to enter into cooperative agreements to the extent they are legally capable and provided authority to improve the global trade position of the United States
1988	P.L. 100-418	Omnibus Trade and Competi-tiveness Act	- Mandated the establishment of regional university-based Manufacturing Technology Centers for transferring advanced manufacturing techniques to small-and medium-sized firms through development of CRADAs in the United States

Summary of Technology Transfer Legislation, Executive Orders, Department of Defense and Air Force Directives and Instruction

Year	Public Law (P.L.)	Name	Major Elements (Purpose)
1988	DoD 3200.12-R-4	Domestic Technology Transfer Program Regulation	- DoD response to P.L. 99-502 - Stipulates responsibilities for heads of DoD Components - Authorizes use of CRADAs - Stipulates use of awards and royalties
1989	P.L. 101-189	National Competi-tiveness Technology Transfer Act (NCTTA)	- Authorized CRADAs for Government-owned Contractor-operated (GOCO) organizations - Protects trade secret information brought into, or developed under, a CRADA from disclosure under FOIA
1989	P.L. 100-519	National Institute of Standards and Technology Authoriza-tion Act Of 1989	- Allowed joint projects to share costs, risks, facilities and expertise
1990	Air force Policy Directive (AFPD) 61-3	Air Force Domestic Technology Transfer Policy Directive	- Established Air Force policy for technology transfer - Provides procedures for CRADAs - Defines responsibilities of ORTAs
1991	P.L. 101-510	Defense Authoriza-tion Act	- Allowed federal laboratories and FFRDCs to award contracts to a partnership intermediary for services that increase the likelihood of laboratory success in joint activities with small business firms

Summary of Technology Transfer Legislation, Executive Orders, Department of Defense and Air Force Directives and Instruction

Year	Public Law (P.L.)	Name	Major Elements (Purpose)
1992	P.L. 102-564	Small Business Technology Transfer (STTR) Act	- Established the STTR program
1993	P.L. 102-25	National Department of Defense Authoriza-tion Act for 1993	- Facilitated and encouraged technology transfer to small businesses
1993	P.L. 102-484	National Defense Authoriza-tion Act for FY 1993	- Extended the streamlining of small business technology transfer procedures for nonfederal laboratory contractors - Directed DOE to issue guidelines to facilitate technology transfer to small businesses - Extended the potential for CRADAs to some DoD-funded FERDCs not owned by the government
1994	P.L.103-160	National Department of Defense Authoriza-tion Act for 1994	- Broadened the definition of a laboratory to include weapons production facilities of the DoE
1996	P.L.104-113	National Technology Transfer and Authoriza-tion Act for 1995	- Mandated CRADA partner an option for exclusive license for inventions made by laboratory - Changed royalty sharing between the inventor and the laboratory
1996	P.L.104-201	National Defense Authoriza-tion Act for FY 1997	- Permits any FFRDC to enter into CRADAs with any entity, federal or nonfederal, under the authority granted by 15 U.S.C.& 3710a

Special Considerations

Publication Impact

Scientists, engineers, and other Government persons who are in a position to patent inventions must be aware that they can no longer patent the invention in the United States one year after public disclosure. Foreign patents generally require absolute novelty, that is, no publication prior to filing the first patent application.

CRADA Partners

Air Force Policy Directive (AFPD) 61-3, Domestic Technology Transfer, states that CRADAs should be formed with U.S. sources and small businesses where possible. They need not be competed since the Federal Acquisition Regulations (FARs) do not cover CRADAs. However, the Government activity will benefit from gathering as much information as possible about qualified and interested parties and carefully evaluating their capabilities to join a partnership. (See International, Section M, for additional information.)

Unsolicited Proposals

Unsolicited proposals can present opportunities to form CRADAs. Proposals that the Air Force considers to be unique rather than just general knowledge may be considered CRADA candidates. Nondisclosure agreements pursuant to the CRADA can protect unauthorized disclosure of proprietary information.

Technology Ownership and Authority to Transfer

Ownership generally depends on who developed the technology, whether under an Air Force contract or under a CRADA. For patented inventions, the patent belongs first to the inventors, who will generally be under a legal obligation to assign their title to their employer. If the inventors are employees of different employers, then the employees will jointly own the patent, and any of them may use, sell, or license the patented invention without accounting to the other for any profits. For copyrighted software or other copyrighted works, first, U.S. Government employees may not copyright works (such works are in the public domain), and second, a joint owner of a copyrighted work must account to any other joint owners for any profits. In some instances, treating them as trade secret information may protect inventions and software not patented or not copyrighted. Trade secret protection is available for inventions or works made by an Air Force or collaborating party employee under a CRADA. The trade secret protection for inventions or works made by an Air Force employee includes a maximum five-year exemption from disclosure under Freedom of Information Act (FOIA).

Patented inventions and copyrighted works made by contractor or collaborating party employees under either an Air Force contract or a CRADA are normally subject to a royalty-free nonexclusive license to the Government for governmental uses. Other rights, such as options to a collaborating party to obtain from the Air Force an exclusive license to inventions made by Air Force employees, are provided for in the terms of a CRADA or may be negotiated later.

Proprietary Information

The rules for protecting information under a CRADA depends on the type of intellectual property and the rules that apply (e.g., patent, trade secret, copyright, proprietary information, etc.). Trade secret information generated under a CRADA is protected from release under FOIA (Reference 15 U.S.C. § 3710a(c)).

Licensing Government-owned Inventions Not Made Under a CRADA

An invention not made in performance of a CRADA that is covered by a patent or patent application with title vested in the U.S. Government can also be licensed to for-profit and not-for-profit entities. The license may be exclusive, partially exclusive, or nonexclusive, and with or without geographic or other use restrictions. The Federal Government retains an irrevocable, worldwide, royalty-free right to use the invention on behalf of the United States

(Reference AFI 51-303).

An application to license such a federal invention must include (a) specific information identifying the invention, (b) history of applicant's business relative to the invention, and (c) a detailed business plan for developing and marketing the invention. The Government may grant a license only if the applicant has supplied the Government with a satisfactory plan, demonstrated his or her capability to fulfill the plan, and agreed that the product of the invention will be manufactured substantially in the United States. In addition, the Government gives first preference to small business firms submitting applications for licenses.

Technology Transfer Revenue

Revenues

There are two types of revenues: (1) Royalties and other payments from the licensing or assignment of inventions: and (2) CRADA income.

Distribution

Royalties and other payments from the licensing or assignment of inventions are distributed in accordance with AFI 61-301 to the individual inventor(s) and to the Air Force activity sponsoring the inventions as follows. The inventor or each co-inventor receives the first $2,000 plus equal shares of at least 20 percent of the total annual revenues received up to a maximum of $150,000 per year. The balance of the royalties and other payments goes to the activity where the invention occurred. If the annual income is less than $2,000 times the number of inventors, each inventor shares the total income equally. An agency or laboratory may provide appropriate incentives, from royalties and other payments, to laboratory employees who are not inventors of an invention but who substantially increased the technical value of the invention .

Royalty/Revenue Flow within the Air Force Regarding Employee Inventions

All royalties and other payments from the licensing and assignment of inventions are forwarded to the Office of the General Counsel for Acquisition (SAF/GCQ) as a central point of contact. SAF/GCQ forwards the royalties and other payment to the appropriate Defense Finance and Accounting Service office with instructions as to how to disburse the royalties and other payments.

Negotiating Royalty Percentages

When trying to establish the percent of royalties payable to the Government that is fair to both the Government and the civilian CRADA counterpart, both parties should consider all facts related to the commercialization and project what income could be expected upon commercialization. The Government negotiates its fair share using these projections.

Use of Royalty/Revenue Income

Royalties and other payments must be obligated by the end of the second fiscal year succeeding the fiscal year in which the royalties and other payments were received. If not used within this time period, the funds revert to the Treasury.

(Caution: In the event that the Air Force fails to take out standard deductions (i.e., FITW) from the checks issued to individual inventors, the inventors should be aware that they are responsible for estimating their taxes in such cases.)

Laboratory Use of the Balance of Royalties and other Payments

After the Air Force distributes the appropriate amount of royalties to the inventor(s) (See "Distribution" left), the balance of the royalties is transferred to the laboratory where the invention was made. That Air Force organization may use those royalties for:

1. Paying expenses incidental to the administration and licensing of inventions and other intellectual property;
2. Rewarding scientific, engineering, and technical employees of that activity;
3. Helping scientific exchange among other activities of the Air Force (this covers related temporary duty [TDY] expenses);

4. Educating and training Air Force employees about research, development, test, or evaluation activity (Reference AFPD 61-3 and 15 U.S.C. § 3710);
5. Maintaining other activities that increase the licensing potential for the transfer of technology; and
6. Conducting scientific research and development consistent with the mission and objectives of the laboratory

CRADA Income

CRADA income, other than royalties and other income from the licensing or assignment of inventions, is deposited under the servicing Defense Accounting Office/Financial Services Office (DAO/FSO) Accountable Disbursing Serial Number (ADSN), into a suspense account as prescribed in AFI 61-302.

CRADA income, other than royalties and other income from the licensing or assignment of inventions, may be used or obligated by appropriate documentation showing the withdrawal of the amount and commitment or obligation to the designated appropriation for the activity's usage. This may be research, development, testing, and evaluation, operation and maintenance (O&M), one of the procurement accounts, or Air Force Working Capital Fund. CRADA income is available for obligation only until the end of the fiscal year in which the appropriation to which it is deposited expires for new obligations.